Introduction

According to the 1991 *Guide for the Development of Bicycle Facilities*, the national planning and design standards published by the American Association of State Highway and Transportation Officials (AASHTO), "Bicycle facility planning is commonly thought of as the effort undertaken to develop a separated bikeway system composed completely of bicycle paths and lanes all interconnected and spaced closely enough to satisfy all the travel needs of bicyclists. In fact, such systems can be unnecessarily expensive and do not provide for the vast majority of bicycle travel. Existing highways, often with relatively inexpensive improvements, must serve as the base system to provide for the travel needs of bicyclists. Bicycle paths and lanes can augment this existing system in scenic corridors or places where access is limited. Thus, bicycle transportation planning is more than planning for bikeways and is an effort that should consider many alternatives to provide for safe and efficient bicycle travel." [5]

The recommended strategies contained within this section of the plan discuss the applicability of various alternatives for accommodating bicycle and pedestrian travel within Jefferson County. These include designated facilities such as bike lanes and multi-use trails, as well as general roadway improvements that benefit motorized and non-motorized users alike, and supplemental programs to promote increased use and safety for bicycling and walking activities.

It is important for the people of Jefferson County to realize that such a balanced approach is necessary to ensure that the needs of all users are being met in a resource efficient and cost effective manner.

Not all cyclists are alike -- the needs of the experienced adult rider differ greatly from less skilled, casual bicyclists and children. And since bicycle riding is comparable to driving a car, pedestrian needs must be addressed separately. This plan therefore focuses on providing a mix of facilities that will offer safe and enjoyable places for a variety of users to bike and walk. In-line skaters, wheelchair users, the elderly population, youth too young to drive, athletes in training, and families with small children all benefit.

The strategies being recommended also balance the needs of bicyclists and pedestrians with those of automobile and truck traffic, and consider existing physical, environmental and fiscal constraints with the potential of new development. As such, the plan offers a vision for quality community growth.

Ultimately, this plan is about relinquishing some of our dependence on the automobile and making street and roadway corridors safer places for all users. Reclaiming streets is viewed as a first step in maintaining and enhancing the vitality of Jefferson County communities as safe and enjoyable places to live, work and play.

Shared-Use City Streets

An underlying philosophy that should guide all bicycle planning is the understanding that bicycles are vehicles, and as such, bicyclists fair best when they act, and are treated, as drivers of vehicles. The first step in making Jefferson County a place that is friendly to bicyclists is therefore to embrace the concept that every street is a bicycling street.

As *AASHTO* states, "to varying extents, bicycles will be ridden on all highways where they are permitted. All new highways, except those where bicyclists will be legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists." [6]

Designing, constructing and retrofitting roadways to better accommodate bicycle use means eliminating basic hazards to bicycle travel. These include wheel-eating drainage gratesrough at-grade railroad crossings, unresponsive traffic signals, rumble strips, pot holes, longitudinal seams in pavement, and a lack of maintenance attention focused on the right-hand edge of roadways. For the most part, the removal of hazards is inexpensive and can be accomplished within routine maintenance schedules and minor roadway improvement budgets.

As understood in this bicycle plan, shared-use facilities include all streets with no special provisions for bicycle travel, typically featuring 12-foot lane widths. They provide access, whether on a bike or in a car, to the many origins and destinations dispersed throughout a community. Most bicycle travel currently occurring within Jefferson County takes place on such shared roadway facilities.

Bicyclists typically find that sharing roadway space with vehicles is most pleasant on local streets in residential areas with low motor vehicle traffic volumes and speeds. The methodology used to determine bicycle stress levels on various streets confirms this.

When traffic volumes are low and vehicular speeds are slow (generally less than 2000 ADT and 30 mph) extra pavement width is not required for bicyclists to feel comfortable sharing roadway space with motor vehicles. [7]

Shared roadways do not usually require or warrant any special signing for bicyclists, unless they are preferred alternate routes or critical links in an overall bicycle system. The topic of bike route signing is discussed in greater detail on page 40 and under the individual community recommendations.

Wide Curb Lanes

On arterial and collector streets with heavier traffic volumes traveling at faster speeds, sharing narrow travel lanes with motor vehicles becomes less attractive, especially to less experienced cyclists. Widening the right-hand or curb lane is a design solution that provides additional roadway space for a motorist and bicyclist to operate parallel to each other in the same lane without coming too close, and without a motorist having to change lanes to pass a bicycle.

Wide curb lanes are defined as right-most through traffic lanes that are 14 feet or wider. Where traffic speeds exceed 40 mph and when traffic volumes exceed 10,000 ADT, lanes 15 or 16 feet wide are considered desirable.[8]

Wide curb lanes offer several advantages. They accommodate shared bicycle/motor vehicle use without reducing the roadway capacity for motor vehicle traffic, minimize both the real and perceived operating conflicts between motor vehicles and bicycles, and increase the roadway capacity by the number of bicyclists being accommodated. Wider curb lanes can also assist turning traffic, may better accommodate trucks and other large vehicles, and require little maintenance to maintain a good bicycling surface.

In Wisconsin, streets with curb lanes 14 feet or wider are especially beneficial because State Statute §346.075 states that, "The operator of a motor vehicle overtaking a bicycle proceeding in the same direction shall exercise due care, leaving a safe distance, but in no case less than 3 feet clearance when passing the bicycle and shall maintain clearance until safely past the overtaken bicycle." [9]

The primary disadvantage of wide curb lanes as a bicycle accommodation is the lack of designation of the street for bicycle use. Since vehicular volumes and speeds are higher, posting bike route signs is not advised. Therefore many less experienced Group B/C

cyclists will not realize the advantages of riding along the corridor. To better accommodate their needs and promote use of bicycles, a signed and striped bike lane or shoulder should be used. (See page 25.)

However, when bicyclists have no alternatives but to use a busy street and there is not enough room for a designated bicycle lane, providing wide curb lanes will improve bicyclist safety and enhance overall traffic flow.

(insert graphics)

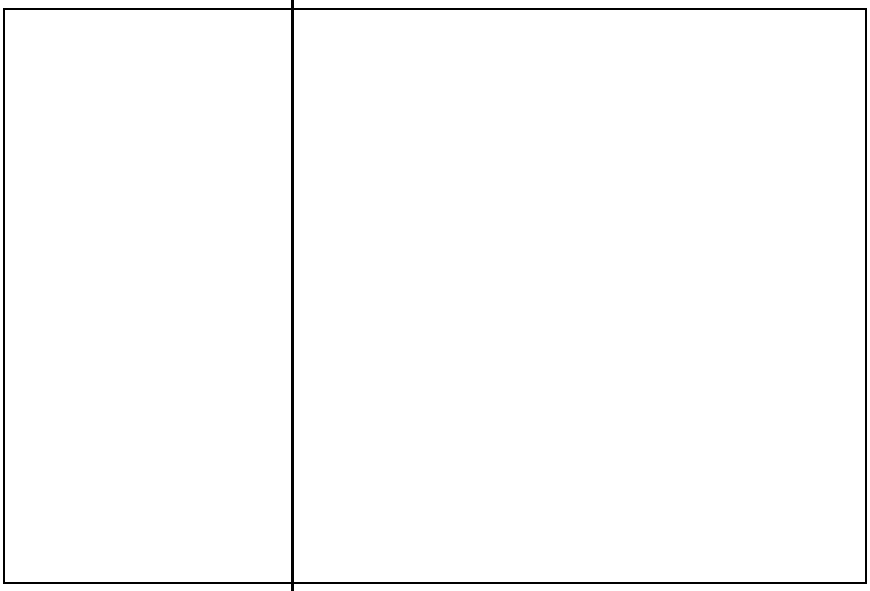
Retrofit Solutions

When widening an existing roadway to provide wide curb lanes is not feasible, restriping the roadway is a recommended alternative. By limiting on-street parking to one side of the street and shifting the street's center line, additional space may be gained for shared motor vehicle/bicycle travel. Restriping may offer the additional benefit of extending the life of the roadway surface by shifting the location of tire tread areas.

Bicycle Lanes

The preferred bicycle accommodation on arterial and collector streets is the bicycle lane. While wide curb lanes may accommodate experienced cyclists, the presence of a signed and striped lane designated for bicycle use will serve cyclists of all abilities, and may even encourage more people to bike instead of drive.

Motorists who drive on an extra wide street every day will probably not realize that this street has been improved for bicycling. Striping bicycle lanes, however, sends a message to cyclists, motorists and people who have never considered bicycling before. This type of "host" facility indicates to all users that bicycling is part of the transportation mix, and invites people to try biking to the store, to work or to school. Striping lanes also establishes a channeling effect which promotes an orderly traffic flow and provides for more predictable movements by cyclists and motorists alike.



Bicyclists typically select streets to ride on based upon a balance of route directness and safety. The additional operating space provided by bike lanes on arterial streets enhances safety on those routes that typically offer direct access to businesses, shopping and other destinations.

Usage Warrants

Whenever WisDOT constructs, reconstructs, or finances street and highway facilities, it is WisDOT policy to consider suitable space for bicycling wherever right-of-way permits, and bicycle use or anticipated use on a street exceeds 25 bicyclists per day.[10] Towns and cities in Jefferson County are recommended to follow a similar practice, striping bicycle lanes on streets where 25 or more bicyclists per day currently use or would like to use a street for transportation purposes.

Design Criteria

Bicycle lanes, which are delineated by painted lane markings, should always be one-way facilities located on either side of the street and should carry traffic in the same direction as motor vehicle traffic. The minimum width for a bike lane is 4 feet. This width excludes the curb and gutter pan and should be measured from the longitudinal joint between the road and the curb and gutter section.

Bicycle lanes tend to complicate turning movements at intersections. Right-turning vehicles must merge across the bike lane, and left-turning cyclists must merge into the motor vehicle left turn lane. For this reason, it is recommended to stop lane striping at least 50 feet before intersections. All bike lane signing should be done in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD).

(insert graphics)

If implemented on streets with on-street parking, bicycle lanes should always be placed between the parking lane and the motor vehicle lanes -- not next to the curb. In this situation, the recommended bike lane width is 5 feet, and the combination bike/parking lane should have a minimum width of 14 feet.

Retrofit Solutions

Existing streets may be cost effectively retrofitted to accommodate bike lanes through lane restriping by reconsidering the need for on-street parking in residential areas, narrowing parking lanes to 7 feet, and/or narrowing travel lanes to 11 feet where speeds are less than 35 mph.

In transportation planning, it is important to remember that a roadway's primary function is to move people and goods -- not to store stationary vehicles. In many cases, safety is generally improved when parking is removed. Such factors must be carefully weighed in different parts of a community and balanced with other needs. For example, on-street parking may viewed necessary to maintain the vitality of the central business district, but optional within residential areas.

Maintenance

Another issue which needs to be addressed when providing on-street bicycle lanes is facility maintenance. Bike lanes must be periodically swept to maintain a riding surface free of sand, debris and gravel. The sweeping motion of cars in adjacent lanes will not simply blow the bicycle travelway free of debris. Like any lane striping, the pavement markings also need to be maintained on a regular basis.

Shared-Use Rural Roadways

The concept that every street is a bicycling street applies to rural roadways as well as curb-and-gutter streets. This plan recognizes that while most of Jefferson County's town roads and county highways are currently used by cyclists of various abilities, not every roadway can be designated as a preferred route for bicycle travel. The proposed county-wide system therefore focuses on linking major origins and destinations together through the safest and most direct paths of travel.

The speed differential between car/truck traffic and bicycle travel is much greater on rural roads than in urban environments, thereby additional safety concerns must be addressed when recommending unimproved rural roadways for bicycle use. When speeds exceed 45 mph, the bicyclist stress level methodology used to evaluate urban roadways is no longer applicable. As an alternative, the process developed for the Wisconsin Bicycle Map was used to evaluate the suitability of two-lane rural roadways for shared use by motor vehicles and experienced adult cyclists.[11] It is important to note that rural roads are not being recommended to be used by young bicyclists; only by those riders 16 years and older who know and understand normal rules of the road.

The rural evaluation process (described more fully on page 10) establishes acceptable levels of traffic volume for roadways of various widths. It examines the occurrence of "bicyclist squeeze points," or how frequently a cyclist may be squeezed off of the roadway by a passing vehicle who simultaneously meets an oncoming vehicle. This situation, also known as a triple pass occurrence, is found to be directly proportional to the volume of cars and trucks using a given roadway.

For this reason, lightly traveled town roads and selected county highways are recommended as preferred rural Jefferson County bicycling routes. It is interesting to note that the methodology determines that rural roads less than 24 feet wide may

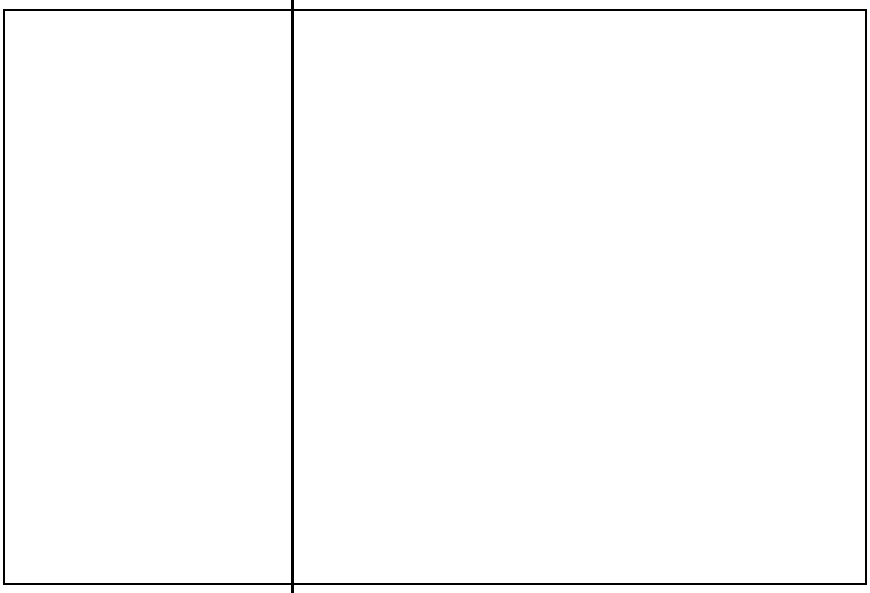
actually be preferred for bicycle riding because vehicles are forced to wait for a clear passing zone to overtake a cyclist, thereby minimizing the potential for bicyclists to be forced off the roadway. Narrow roads also have the added benefits of light truck traffic and vehicles traveling at slower speeds, as dictated by the roadway design.

In identifying a recommended route system to link communities within Jefferson County, such roadways were selected wherever possible to maximize use of existing transportation facilities. Where such alternatives are not available, paving roadway shoulders is the recommended improvement to better accommodate bicycle travel.

Paved Shoulders

As discussed previously, unimproved rural roadways with low traffic volumes can effectively accommodate bicycle travel with no additional pavement width provided. However, to improve user safety in selected corridors with high vehicular traffic volumes and speeds, certain rural roadways should be widened through the addition of paved shoulders.

Shoulders are designed to provide structural support for a roadway and offer a break down and recovery area for motor vehicles. They cut down on the incidence of run-off-the-road accidents, eliminate rutting and dropoffs at the edge of pavement, improve drainage and reduce maintenance costs. Paved and maintained roadway shoulders also improve conditions for bicycle travel on roads without curb and gutter by providing additional operating room.



Like wide curb lanes, paved shoulders may be referred to as a type of bicycle facility. However, current trends in bicycle planning treat these less as "facilities" and more as general conditions that exist within the transportation system and which offer definitive improvements to bicycle travel.

Design Criteria

Paved shoulders intended to benefit bicyclists should be at least 4 feet wide, per the minimum *AASHTO* standards for bikeways. The WisDOT Facilities Development Manual further recommends 5-foot wide paved shoulders on rural two-lane state trunk highways, and 10-foot shoulders on four-lane divided expressways to accommodate bicycles.[12]

As a bicycle accommodation, shoulders must be smoothly paved and maintained to an equivalent surface standard as regular travel lanes, and should not be routinely used as right turn lanes for vehicular traffic. Ideally, wider paved areas will be provided at the

intersection of gravel drives with the paved shoulder to reduce the amount of loose gravel carried onto the bicycle travelway. Rumble strips should not be present on shoulders. If used, additional paved width for bicyclist use should be provided on the right side of a narrow rumble strip.

Usage Warrants

The Wisconsin Department of Transportation facility warrants state that when WisDOT constructs, reconstructs, or finances and street/highway facilities, it will include suitable space for bicycling wherever right-of-way permits, and bicycle use or anticipated use on a roadway exceeds 25 bicyclists per day.[13]

Jefferson County and its towns and cities are recommended to follow a similar practice, paving roadway shoulders in locations where 25 or more bicyclists per day currently use or would like to use a roadway. This practice will better accommodate both bicycles and motor vehicles in rural and developing areas.

To maximize use of limited roadway construction funds, the Jefferson County Bikeway/Pedestrianway Plan identifies those segments where paved shoulders are most needed, based on a safety evaluation of vehicular traffic counts and pavement widths. This information is furnished in the following section of the plan under recommendations for each of the respective jurisdictions.

Shoulders as Bike Lanes

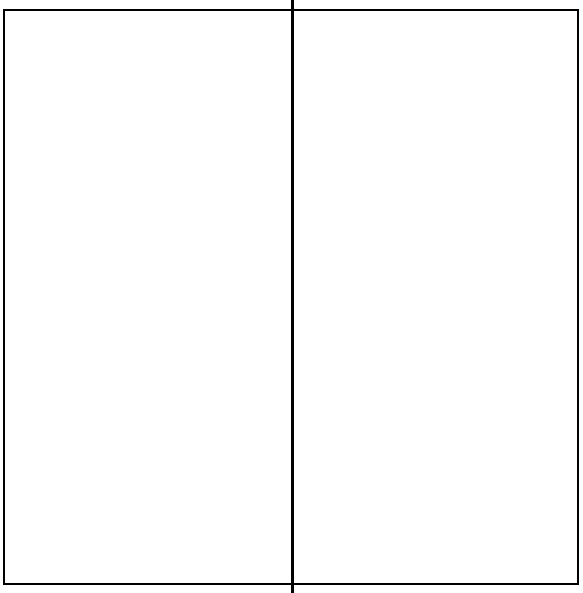
As warranted, some of the shoulder bikeway segments may be designated as host bicycle facilities by signing and marking for preferential use similar to bike lanes. This practice is recommended within Jefferson County only on sections of roadways located at urban fringes where vehicular speeds are less than 40 mph. Shoulder sections marked as bike lanes should be appropriately designed and signed to mark their transition into shared roadway situations.

On roadway segments where shoulder bike lanes are desired and there is currently a paved shoulder less than 4 feet wide, consideration should be given to restriping the roadway. Narrowing vehicular travel lanes from 12 feet to 11 feet may help to slow motor vehicle traffic as it approaches and enters a community, and will provide an extra foot of shoulder area for designated bicycle use.

Bike Paths/Multi-Use Trails

In transportation planning, bicycle facilities separated from the street and road system are referred to as bicycle paths. However, any path that is open for public use is likely to be popular with walkers, joggers, in-line skaters, pet owners, wheelchair users and others, as well as bicyclists. Hence the term multi-use trail has become synonymous with bicycle path. By either name, these facilities are typically paved trails a minimum of 10 feet wide that are separated from the roadway system and designed for the exclusive use of bicycles and other non-motorized users.

Bike paths serve as significant generators of bicycle use, especially for less skilled cyclists. They provide enjoyable recreational opportunities, as well as desirable commuter routes. Bike paths can be most effective when they provide system continuity and linkage in areas where no on-street facilities are available, such as along abandoned railroad rights-of-way or within linear parks or greenways.



Short segments of bike path are also valuable as cut-throughs between buildings or connections between cul-de-sacs and other breaks in the street network. Due to safety considerations, sidewalks and walkways located immediately adjacent to a roadway typically should not be designated as bicycle paths or similar multi-use facilities.

Design Criteria

Trails attract a variety of user types and therefore need to be designed to accommodate multiple users. Trails provided primarily for a recreational purpose do not need to be paved. However, trails should be paved if they are desired to be used for commuting or transportation trips.

Most often, trails within communities are paved to widths of 10 feet or more. Trails in rural areas may be only 8 feet wide and surfaced with limestone screenings or similar material. Per *AASHTO*, an 8-foot width is adequate only where the following conditions prevail: [14]

1) bicycle traffic is expected to be low, even on peak days or during peak hours;
2) pedestrian use of the facility is not expected to be more than occasional;
3) there will be good horizontal and vertical alignment providing safe and frequent passing opportunities; and
4) the path will not be subjected to maintenance vehicle loading conditions that would cause pavement edge damage.

Bike path projects should provide adequate access points and appropriate transition areas to the on-street bikeways that complete the remainder of a community's bicycle system. Restricting motor vehicle access, considering the safety and security of trail users and adjacent property owners, and providing adequate resting points for pedestrians are additional design requirements.

Paths should also be signed per standards set forth in the *Manual on Uniform Traffic Control Devices*, Part IX: Traffic Controls for Bicycle Facilities.[15]

Sidewalks and Sidepaths

Sidewalks in Jefferson County communities are commonly used for bicycle travel, especially by young children. However, by state and national standards, sidewalks are not and should not be designated as bicycle facilities. Sidewalk widths are typically only 4 to 6 feet -- half that of the recommended national standard bicycle path width, and as such to do not allow sufficient room for joint use by cyclists and pedestrians. Conflicts arise when bikes and peds share such facilities because cyclists typically travel at speeds much faster than average walking speeds, and because pedestrians have the ability to make quick, unpredictable lateral movements in front of the path of an oncoming or overtaking bicyclist.

AASHTO defines a sidewalk as "the portion of a highway designed for preferential or exclusive use by pedestrians." Most of us recognize sidewalks as concrete facilities separated from the street by a curb-and-gutter and/or grass planting strip.

The term sidepath is commonly used to describe a two-way bicycle path, often constructed of asphalt, placed immediately adjacent to one side of a street or roadway, similar to a sidewalk.

Wisconsin Bicycle Planning Guidance states that two-way bike paths should not be placed on or adjacent to roadways, and where used, there must be a 5-foot minimum width separation or physical barrier of sufficient height.[16]

Similarly, the national *AASHTO* standards state that two-way bike paths located immediately adjacent to a roadway may not be the best way to accommodate bicycle travel along highway corridors for the following reasons: [17]

1) Unless paired, they require one direction of bicycle traffic to ride against motor vehicle traffic, contrary to normal "Rules of the Road."
2) When the bike path ends, bicyclists going against traffic will tend to continue to travel on the wrong side of the street. Likewise bicyclists approaching a bicycle path often travel on the wrong side of the street in getting to the path. Wrong-way travel by bicyclists is a major cause of bicycle/automobile accidents and should be discouraged at every opportunity.
3) At intersections, motorists entering or crossing the roadway often will not notice bicyclists coming from their right, as they are not expecting contra-flow vehicles. Even bicyclists coming from the left often go unnoticed, especially when sight distances are poor.
4) When constructed in narrow road rights-of-way, the shoulder is often sacrificed, thereby decreasing safety for motorists and bicyclists using the roadway.
5) Many bicyclists will use the roadway instead of the sidepath because they have found the roadway to be safer, more convenient or better maintained. Cyclists using the roadway are often subjected to harassment by motorists who feel that in all cases bicyclists should be on the path instead.
6) Bicyclists using the bike path generally are required to stop or yield at all cross streets and driveways, while bicyclists using the roadway usually have priority over cross traffic, because they have the same right-of-way as motorists.
7) Stopped cross street motor vehicle traffic or vehicles exiting side streets or driveways may block the path crossing.
8) Because of the closeness of motor vehicle traffic to opposing bicycle traffic, barriers are often necessary to keep motor vehicles out of bicycle paths and bicyclists out of traffic lanes. These barriers can represent an obstruction to bicyclists and motorists, can complicate maintenance of the facility, and cause other problems as well.

In certain locations, a parallel bike path within the road right-of-way may be an appropriate design treatment. This option should be considered only when there is sufficient space or a physical divider to enforce the concept that the trail functions as a separate highway for bicyclists; and when few streets and driveways intersect with the trail facility and/or they are low volume intersections. Separated sidepaths are generally constructed when other types of bikeways are considered too hazardous for bicycle travel, such as along urban freeways, and when there is a commitment to provide bike path continuity for an extensive length of the highway corridor.

It is important to note that bike paths located within a road right-of-way should not be a substitute for bicycle street access.

Pedestrian Needs

Pedestrian travel needs differ from those of bicyclists, and may best be served through a network of sidewalks along public rights-of-way. Pedestrians are slower than cyclists, prefer greater separation from traffic, are the least tolerant of out-of-direct paths of travel and, since motorists often are not looking for pedestrians, are the most vulnerable of roadway users.

To accommodate pedestrians, sidewalks should be provided along all streets and roadways. The chart on the following page summarizes federal guidelines for sidewalk

installation.[18] Whenever adequate right-of-way is present, a planting strip is also recommended to provide a buffer area between motor vehicle traffic and pedestrian movement. To further improve the quality of the pedestrian walking environment, overstory trees are desired to be planted within the buffer areas to canopy the sidewalk and provide both physical and visual separation from the vehicular travelway. Planting trees between the street and sidewalk also interrupts roadway sight lines, causing motorists to slow down.

All sidewalks and curb ramps must meet federal requirements of the American with Disabilities Act (ADA) for public walkway widths, slopes and surface textures, as defined in the June 20, 1994 *Federal Register*.[19] Likewise, Wisconsin State Statue §66.616 requires the provision of curb ramping where sidewalks are constructed and establishes design requirements for them.[20]

Curb ramps should be installed perpendicular to the street, so as not to direct users into the flow of vehicular traffic, and should lead into a safe crosswalk area.

Guidelines for Installing Sidewalks [18]

Type of Land Use	Recommended Facility Placement	Recommended Facility Width	Recommended Buffer Area
Residential - arterial and collector streets	sidewalks on both sides of street	5' wide	4' - 6' planting strip
Residential - local streets with 4 or more units per acre	sidewalks on both sides of street	5' wide	4' - 6' planting strip
Residential - local streets with less than 4 units per acre	sidewalks preferred on at least one side of street at minimum, shoulders required on both sides	4' wide *or* 4' wide roadway shoulders	4' - 6' planting strip
Commercial and Industrial areas outside of the CBD	sidewalks on both sides of street	5' wide *or* 6' wide	4' - 6' planting strip if no planting strip
within the Central Business District	before installing a sidewalk, follow the methods in the 1985 *Highway Capacity Manual (special report 209)* to conduct an analysis of level of service		

Zoning and development ordinances regulating sidewalk development can further impact pedestrian travel. Communities in Jefferson County that require developers to build sidewalks at the time a tract of land is developed should consider amending such practices. Since it may be several years before development is continuous along a roadway corridor, a preferred practice is to construct sidewalks as part of the initial street construction project, and as applicable, assess these costs back to future site developers. In this manner, pedestrians will be assured to have continuous access to new development, just as motor vehicles do. Project costs should also be less since the sidewalk is being constructed as an incidental part of the overall project, rather than as a retrofit after infill development.

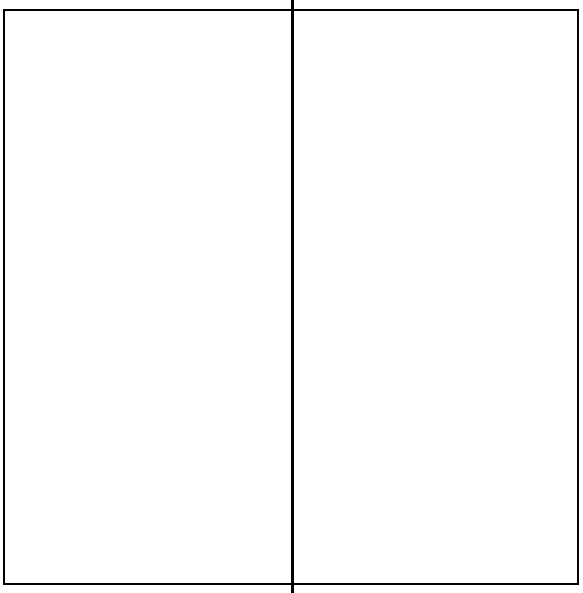
Pedestrian accessways, or short segments of sidewalk not located within street rights-of-way, should be constructed in areas where shorter and more direct paths of travel are desired to encourage and facilitate safe walking trips. Such locations include providing rear or side access to a shopping center from an adjacent residential neighborhood, and providing links between subdivisions, especially to shorten walking distances to schools and parks. Since facilities that shorten trip lengths will likely be popular with bicyclists, pedestrian accessways are recommended to be sidewalks or asphalt paths at least 8 feet wide.

To provide a change of scenery for pedestrians, longer multi-use trails make a nice addition to a community's sidewalk system. In most instances, such projects are most feasible along abandoned railway corridors, utility easements, rivers, streams and within linear parks. All trails constructed in these areas should be designed to meet minimum bicycle facility standards in order to facilitate multi-use, as previously described on page 30. Paved surfaces are also recommended for urban and suburban trails to ensure access by pedestrians of all abilities, including wheelchair users, and to accommodate in-line skaters.

Traffic Calming

Maintaining "liveable communities" should be a long-term priority for Jefferson County as it experiences growth in the next decade. This need was emphasized during the public workshops held at the beginning of this planning process. Safety, access, and quality environments were three terms frequently used to describe bicycling and walking improvements desired in the county. Calming or slowing vehicular traffic within communities is one strategy that results in increased safety, improved bike/ped access, and high-quality public spaces.

Reducing vehicular travel to speeds that are compatible with bicycle travel lessens the need for wide lanes to accommodate safe passing situations. Slowing traffic through neighborhoods and business districts has the additional advantage of equally benefitting pedestrians.



While it is important to move vehicles, it is also necessary to remember that streets are not just for cars, and residents have rights to the best quality of life a community can provide. Grandma needs to be able to walk across the street to get to the grocery store, and cyclists should be able to patronize downtown businesses on bike. Reclaiming main streets as places for people should therefore be a long-term goal of this plan.

Several mechanisms exist to slow vehicular travel speeds within Jefferson County communities. Suggestions for consideration with future major improvement projects are presented following. Most effective will be to reduce the speed at which trucks and automobiles travel by altering the roadway design, or by changing the psychological feel of the street. More passive measures may also be implemented, if supplemented with law enforcement.

Lowering Posted Speed Limits

As recommended in the MUTCD, speed limits should be determined based upon several factors including:

- road surface characteristics, shoulder condition, grade, alignment, sight distance and curves
- the 85th percentile speed (speed at which 85% of the traffic is traveling regardless of posted speed limit) and the pace speed
- land uses and activities along the roadway and their compatibility with different speeds

- use of the road by pedestrians and for parking
- reported accident experience. [21]

On certain roadway sections in Jefferson County, most notably at the fringes of communities, it is recommended to consider lowering posted speed limits. Communities should work cooperatively with WisDOT and the County Highway Department to ensure that all appropriate factors are considered when determining and re-evaluating posted speed limits. The safety of residents and the need to accommodate bicycle and pedestrian travel must be balanced with an assessment of the 85th percentile speed.

Using signing alone as an approach to calming traffic is referred to as a passive control device. Signs do not physically prevent action and are only effective when enforcement is possible. If there is little law enforcement of posted speeds and drivers resent the limits on their travel, compliance will be low and the attempt to lower speeds will be ineffective.

(insert graphics)

Curb Radius Reductions

The first recommendation for physical corridor improvement involves reducing curb radii at intersections. In engineering practice, turning radii have been increased over the years to accommodate longer truck and bus lengths and to increase capacity for right turn movements. These larger radii increase dangers for crossing pedestrians and crossing and right-turning bicyclists because of faster motor vehicle movements and because the intersection is widened and exposure to traffic is increased.

The reduction in curb radii from current practice to a radius of less than 15 feet effectively narrows intersections for pedestrian crossings, and slows traffic as it approaches and turns at the intersection.[22] Selecting a smaller curb radii for the benefit of non-motorized users must be balanced with the need to accommodate access by large trucks and emergency vehicles. As discussed following, any implementation of curb

bulbs should include application of small turning radii to be most effective in calming traffic.

Curb Bulbs or Curb Extensions

The "Main Street" of each community in Jefferson County is a state trunk or county highway, and as such, carries through traffic that often travels at speeds incompatible with other activities of the Central Business District, such as pedestrian crossings and customer parking. In most instances, the need for on-street parking in the CBD also limits the ability to provide bike lanes on Main streets. To alert motor vehicles that they need to slow down because they are entering a "people space" as they move through downtown areas, physical improvements that narrow the perceived roadway width are recommended for future consideration.

Properly designed and installed curb bulbs are curb extensions that create neckdowns or chokers at intersections. The actual width of the travel lanes remains the same, but the overall roadway width is narrowed where on-street parking is restricted at intersections. Curb bulbs thus visually narrow the width of the corridor, decrease crossing exposure for pedestrians, help to define parking lanes, and protect visibility at corners. Curb bulbs also provide space for seating, bicycle parking and street tree plantings, and may be installed between intersections to improve mid-block pedestrian crossings.

The City of Jefferson is currently implementing curb extensions as part of its Main Street streetscape improvements. Other communities are encouraged to follow this lead, and are recommended to install larger extensions with smaller curb radii for the joint benefits of slowing traffic and improving the aesthetics of their downtowns. For the benefit of cyclists traveling these routes, it is important to provide at least 14 feet of useable lane width, and for the benefit of maintenance crews, bulb angles should be designed to accommodate snow plowing activities.

Tree Planting and Streetscape Improvements

The quality of the bicycling and walking environment was an issue repeatedly raised by Jefferson County residents during this development of this plan. Planting overstory trees to canopy the sidewalk and edge of the street represents a simple means of enhancing the quality of public spaces. Trees also provide a physical separation and buffer between vehicular and pedestrian traffic. Tree planting areas may be provided within curb bulbs, in planters as part of other streetscape improvements, in a buffer planting strip between the curb and sidewalk in residential and strip development areas, also between the sidewalk and parking lots, and adjacent to roadways with shoulders.

Tall street trees provide vertical elements within transportation rights-of-way that make the corridor seem narrower. This perception can cause motor vehicle operators to reduce their speeds. Multi-story buildings, buildings located close to the street, pedestrian scale light posts, banner and flag poles, and other vertical elements can have the same effect. In contrast, developing areas with "big box" buildings set far away from the street behind parking lots increases the visual width of the street and encourages faster automobile travel.

As communities in Jefferson County develop and update their comprehensive plans and development ordinances, they are recommended to consider *minimum* building setbacks, front landscaping ordinances that require planting overstory trees, and routine provisions for a grassy buffer strip planted with trees as an incidental component of all street and roadway projects.

Other Growth Policies

Since Jefferson County is one of the fastest growing counties in Wisconsin, it is important to consider how land use and development affect transportation. As the County, its communities and towns develop comprehensive plans for new growth, traffic calming measures and bicycle/pedestrian needs should be considered.

Most notably, new development should minimize low-density sprawl into the rural areas of the county. Development patterns that include numerous cul de sacs force cars, bikes and pedestrians to use a single county highway or town road to access the rest of the community. As an alternative, future suburban development should be plotted out to include bike/ped access between adjacent cul de sacs to minimize fast vehicular travel in subdivisions while providing alternative bicycle routes.

Environmental Corridors

Environmental corridors in Jefferson County contain a variety of important natural and scenic resources, including stream corridors, wetlands, floodplains, glacial features, water bodies, and woodlands.[23] (See map on page 39.)

A comprehensive analysis of the County's environmental corridors for a recreational bicycle and pedestrian trail system is not part of the scope of this transportation plan. The Bikeway/Pedestrianway Plan recognizes, however, that opportunities exist within corridors and supports trail development to aid bicycle and pedestrian travel in Jefferson County.

In fact, a large impetus for preparing this Jefferson County Bikeway/Pedestrianway Plan is the interest in developing the Rock River Recreational Trail and preserving this riparian corridor for public use and enjoyment. As outlined in the 1994 Master Plan for the project, segments of off-road trail are proposed to be constructed at the edge of the flood plain environment and along sections of abandoned rail corridor. These trails will be connected by on-road facilities as outlined in the Rock River Recreational Trail Plan and this Bikeway/ Pedestrianway Plan.

Overland Connectors

To facilitate trail construction within the former C & N.W. Railroad corridor south of Fort Atkinson, and the WEPCO right-of-way southeast of Watertown, it is recommended to preserve the entire width of these rights-of-way, typically 100 feet or more, in perpetuity either through title purchase or permanent conservation/public access easements.

Preserving a wider corridor provides space for construction and maintenance of the trail and cross drainage structures, helps to ensure that adequate sight distances will be

maintained at intersections, provides a buffer to adjacent private properties, offers space to develop trail heads and rest areas, preserves wildlife habitat, may protect rare and endangered plants that exist in the undisturbed right-of-way, and preserves the corridor for future public uses such as utility and fiber optic lines, or the return to rail use.

An additional type of overland connector trail considered in this planning study is the snowmobile trail. However, snowmobile trails are informal and temporary access easements which, during the biking/hiking season, typically route across farmland. Since physical trails typically do not exist beyond the paths through the snow, such corridors were determined to be inappropriate for the development of year-round multi-use transportation and recreation trails.

Floodplain Greenways

As with the proposed overland connectors, it is important to obtain easements of sufficient width to facilitate construction of trail segments proposed to be developed immediately adjacent and parallel to the Rock, Maunesha, Crawfish and Scuppernong Rivers. Trails in these locations need to be designed and constructed to withstand potential flooding and minimize trail maintenance requirements, while protecting the sensitive riparian environments that make such facilities attractive.

Trail development along rivers and streams in Jefferson County should be accomplished through the preservation of multi-objective greenway corridors. Such projects are designed to fulfill multiple purposes and thus have many benefits including flood control/stormwater management, water quality protection, wildlife habitat protection and enhancement, economic development, increased property values, cost effective utility service, community awareness and education, alternative transportation, and recreation.

To fulfill multiple goals, riparian greenway corridors must preserve and protect the ecosystem of the river corridor. Introducing a paved, or even graded and naturally surfaced trail into the riparian environment is thereby offset by the benefits of corridor preservation. Plus Jefferson County residents will gain access to, and an increased awareness of, the county's scenic and historic water resources.

Ideally, the entire width of the floodplain should be protected from urban/suburban encroachment and development. At *minimum*, 35 feet from the top-of-bank is needed to provide a streamside buffer, space for a trail, and a privacy buffer for adjacent property owners. It is recognized that in existing built-up areas, certain corridor segments may need to be narrower. However, it must be noted that in many instances a corridor wider than 35 feet will be required to accommodate design features as bicycle-safe and handicap accessible trail grades (5% maximum slope), trail curve radii (a minimum 95-foot radius), and avoidance/minimization of wetland areas.

Implementing proper planning, zoning and land use development guidelines is necessary to ensure feasibility of future trail development, especially on the edges of cities and villages. With the rapid growth rate of Jefferson County communities, it is not advised that local agencies wait to address these issues until the time when a community is ready to begin project construction, or several trail connection opportunities may be lost.

Bike Route Signing

Jefferson County Bikeway/Pedestrianway planning workshop attendees and survey respondents expressed a strong desire to have signs posted along streets and roadways to identify preferred bicycling routes and provide direction on how to get from one destination to another. Bike route signing was also viewed by participants as a cost effective means of encouraging more people to ride their bikes.

Community Signing

Many communities nationwide have used the national standard #D11-1 "BIKE ROUTE" sign, as depicted below, along streets and roadways within their jurisdiction. Unfortunately, this treatment tends to be over used, and at times misused. As described in the *Manual on Uniform Traffic Control Devices* (MUTCD), "On highways where a bicyclist is sharing a lane with motor vehicles or is using an adjacent bikeway, the regular (motor vehicle) guide signing as described in Part II of this Manual will serve the needs of both modes of travel. Where a designated bikeway exists, special bicycle route signing should be provided at decision points along the bikeway, including signs to inform cyclists of bicycle route direction changes and confirmatory signs to ensure that route direction has been accurately comprehended." [24]

Thus according to the MUTCD, bike route signing is not needed along most streets. This supports the overriding bicycle planning principle that every street is a bicycling street, and cyclists will use a variety of streets in selecting convenient routes which lead to various destinations. Where bike route signing is implemented, arrow and destination plaques are recommended to be used with the #D11-1 sign to furnish additional route guidance. (Reference pages 9B-9 to 9B-13 of the *MUTCD*.) This signage treatment is recommended for use ***within cities*** in Jefferson County that wish to designate certain streets as preferred routes to local cycling destinations.

A signed bicycle route should:

- indicate a direct route to a useful destination
- utilize low stress streets or designated bicycle facilities
- be adequately signed to show destinations and distances.

It must be noted that, for liability and safety reasons, all hazards to bicycle travel should be removed or improved before signing a route. These include items as unsafe drainage

grates, rough railroad crossings, unresponsive traffic signals, pot holes, gravel and debris.

As a general guide, streets that provide direct routes of travel and have traffic volumes less than 2,000 ADT and speeds less than 30 mph are most suitable for shared-use bicycle route designation.[25] Widened curb lanes, paved shoulders and designated bike lanes are recommended design treatments for streets and roadways with higher traffic volumes and speeds. Bike route signs should not be used to designate sidewalks and other substandard facilities as bikeways.

County-wide Routes and Rural Roads

Using the standard "BIKE ROUTE" sign on rural roadways is not recommended due to the speed differential between cyclists and rural traffic. While several counties in Wisconsin and other states have used the signs in this manner, some leading national experts on bikeway liability discourage this practice because the presence of bike route signs may encourage youth and less experienced cyclists to ride under conditions that are unsafe for their skill level.[26] Maps depicting rural bicycling routes, with appropriate disclaimers as to skill levels required to ride such roadways, are a preferred method of identifying routes. As applicable, paving roadway shoulders is also recommended to further increase safety on rural highways with heavier traffic volumes.

However, the AASHTO *Guide for the Development of Bicycle Facilities* states that "It may be advantageous to sign some urban and rural roadways as bicycle routes ... Overall, the decision whether to provide a bicycle route should be based on the advisability of encouraging bicycle use on a particular road, instead of on parallel and adjacent highways." [27]

The Jefferson County Bikeway/Pedestrianway planning process included a technical analysis of town roads, county and state highways in an effort to determine safe and direct routes for bicycle travel between communities in the county. In areas where few suitable options exist, it will be advantageous to provide in-field directional assistance to bicyclists to ensure that they follow the recommended routes. With the County's concern with potential liability created by signing, several options are presented following for signing such roadways in lieu of using the *MUTCD* "BIKE ROUTE" signing.

Destination Signing

To minimize bicycle liability exposure, the county may opt to provide destination signs along the preferred bicycle routes following the MUTCD standard for vehicular guide signage. (See pages 2D-19 to 2D-23 of the *MUTCD*.) Green and white destination signs carry the name of a city, town, village or other traffic generator, and a directional arrow. The distance to the named place may also be shown. Distance signs show the name of one to three cities, and the distance (to the nearest mile) to those places. The disadvantage of using this approach along preferred bicycling routes is that the signs may attract additional vehicular traffic onto the roadways.

Rustic Roads

Another approach that would not encourage fast, through vehicular travel is to designate certain routes as Wisconsin Rustic Roads. This WisDOT program preserves the state's scenic, lightly traveled country roads for the leisurely enjoyment of bicyclists, hikers and motorists. Rustic Roads in Wisconsin are created when local communities or counties initiate application to the WisDOT. Officially designated Rustic Roads are marked with yellow and brown signs and speed limits are kept at 45 mph or less. Qualifying roads should not be scheduled for major improvements which would change those rustic, park-like characteristics that make them well suited for quiet and leisurely vehicular and bicycle travel.

European-Style Signing

A final option follows directional bicycle signing found in Europe. This approach uses long, rectangular signs cut on one end to form an arrow sign. At intersections, multiple signs are mounted on one post to indicate travel directions and distances to

(insert logo graphics)

various destinations. The European signs also include a bicycle icon, but a preferred application in Jefferson County would be to use a modified county-wide bike logo.

An example logo depicting the Glacial Drumlin Trail and Rock River Corridor is provided above. The County may wish to adopt a similar "Bike Jefferson County" logo, or sponsor a logo design competition to further increase awareness of local bicycle planning efforts. The adopted logo should be used on all promotional materials associated with bicycling in Jefferson County and in general materials distributed by local Chambers of Commerce.

As depicted above, the logo could be slightly modified for use on rural roadway signs by removing the wording and the bike icon. This would result in a simple graphic suitable for use at a small scale, as would be required on the directional signs. Bicyclists familiar with the Bike Jefferson County program would recognize the logo and know the signing was meant for their benefit, but inexperienced cyclists would not see a large, green "BIKE ROUTE" sign to tempt them to use a roadway without appropriate skills or caution.

As county routes approach urban areas, a larger Bike Jefferson County logo plate could be combined with the standard route signing recommended for use in cities. In this manner, bicyclists traveling through a community may use a portion of the local bike route system with the confidence that a selected route will lead across the city and rejoin with the rural route system.

A similar approach would be to delete all references to bicycling and create a "Jefferson County Backroads" program. Signs identifying the "backroads" would be posted as described above. Mapping, marketing and educational efforts undertaken in Jefferson County would then need to promote the backroads as the county's preferred bicycling routes.

Warning Signing

As previously discussed, it is advised that traditional "Bike Route" signs only be used on low traffic, low speed local streets. Likewise, proposed county directional signage should be posted only on selected town and county roads that combine the benefits of low traffic volumes with direct routes between communities. In other locations, as identified in Part III of this report, warning signs may be posted to alert motorists to the probable presence of bicyclists and to advise cyclists to use caution when riding on these roadways.

The recommended signage treatment for this situation follows that of the North Carolina Department of Transportation, with "Share the Road" signs mounted below a standard yellow #W11-1 bicycle warning sign. According to NCDOT, this sign is intended to increase bicyclists' visibility without designating the signed roadway as a preferred route. It is intended for use on roadways with high levels of bicycle traffic, but relatively hazardous conditions for bicyclists.[28]

In Jefferson County, use of this sign is suggested as an interim solution with paved shoulders or other physical improvements ultimately recommended.

Where the preferred county-wide routes must cross or route on a short section of busier highway, a similar warning sign treatment is recommended. The yellow diamond bicycle crossing sign should be supplemented with plates that read "Xing" or "Next 2 Miles," as appropriate. As specified in the MUTCD, these signs should be installed 750 feet before intersections in rural areas, and 250 feet in urban environments.

Additional guidance for using a variety of regulatory signing is provided in Part IX: Traffic Controls for Bicycle Facilities of the MUTCD.

Bicycle Parking

A final facilities recommendation for Jefferson County communities addresses the need for secure parking to significantly decrease the risk of bicycle theft and improve bicycle accessibility. If conveniently located, bicycle parking may decrease travel time and therefore increase the ability of the bicycle to compete as a transportation mode. The regular presence of bicycle parking also delivers the message that a community is bicycle-friendly and may encourage more people to use their bicycle for utilitarian purposes.

Currently there is a general lack of bicycle parking in the Jefferson County communities. Where racks are provided, they are typically of a design that offers little security from theft or stability to support a bicycle frame.

Of all the recommendations contained within this Bikeway Plan, providing secure and convenient bicycle parking may be the one strategy that represents the "biggest bang for the buck." With this in mind, future planning and zoning efforts within the County and its communities should include the adoption of an official bicycle parking ordinance.

The ordinance should require bike parking as a condition of new development -- just as the need for automobile parking is met. Individual components of the ordinance should include types of recommended racks, amount of bicycle parking required, and location of parking facilities. An additional program should be implemented to encourage existing establishments to also provide appropriate bike parking.

Design Guidelines

Bicycle parking facilities vary in design type depending on intended duration of use. Several factors common to all acceptable bicycle parking installations are:

- Good support of the bicycle
- Security (capacity to lock frame and both wheels)
- Ease of use
- Durability
- Visibility of parking area
- Convenience to destination
- Compatibility with site conditions
- Attractiveness

There are many useful types of facilities on the market, which fall generally into three categories. Please note that only *Type I* and *Type II* parking facilities are recommended for use within Jefferson County, and existing *Type III* facilities should be replaced with racks that offer greater support and security.

Type I facilities include bicycle lockers, locked enclosures and supervised areas providing protection from theft, vandalism and weather for longer term parking. Employees and commuters have long-term parking needs, generally 6 to 10 hours each work day, for which the high security of *Type I* parking is recommended. Bike lockers are also recommended for use on the UW-Whitewater campus, where long-term student parking requires additional security and protection from the weather.

Type II parking facilities are stands, racks or other devices that allow a bicyclist to lock one or both wheels and the frame securely with a U-lock. This type of rack supports the entire bike frame rather than a wheel only, and includes ribbon racks, inverted "U" stands, CORA racks, and similar models. Customers, shoppers, students and recreational visitors have short to medium-term parking needs, for which the medium security of *Type II* parking is recommended.

Type III facilities are identified as any stand that holds a bike by one wheel only without supporting the bicycle frame. Most traditional school yard racks are of this design and fall into this category. However, since *Type III* facilities do not allow the user to lock the frame and wheel using a U-lock, they are not recommended.

Many styles of each type of parking are available commercially. The following represents a partial list of suppliers who may be contacted to obtain a variety of recommended Type I or II bicycle parking devices, or local steel fabricators may be contracted to make inverted "U" stands.

American Bicycle Security Co., P.O. Box 7359, Ventura, CA 93006
(800) BIKESAF
BCI Burke Company, Inc., P.O. Box 549, Fond Du Lac, WI 54936
(414) 921-9220
Bike-Lokr Mfg. Co., Box 123, Joplin, MO 64802
(417) 673-1960
Bike Security Racks Co., P.O. Box 371, Cambridge, MA 02140
(617) 547-5755
Colorado Bicycle Security, 9285 Ermindale Drive, Littleton, CO 80124
(303) 796-8218
CORA Bike Rack Inc., P.O. Box 1647, Bellingham, WA 98227-1647
(800) 354-8624
Cycle-Safe Inc., 2772-5 Woodlake Road SW, Wyoming, MI 49509
(616) 538-0079
Graber, 5253 Verona Road, Madison, WI 53711
(608) 274-6550 or (800) 783-7257
Madrax Inc., 2210 Pinehurst Drive, Middleton, WI 53562-2539
(608) 831-9040 or (800) 448--7931
Sunshine U-Lok Corp, 31316 Via Colinas, #102, Westlake Village, CA 91362
(818) 707-0110

Amount of Parking Required

The following table can be used as a general guide to establish an appropriate number of bicycle parking spaces for different land uses.

Adopted from bicycle parking requirements in Victoria, Australia,[29] the table represents simplified, yet similar, requirements to those currently used in the U.S. cities of Portland, OR, Missoula, MT, Boulder, CO, Eugene, OR, Palo Alto, CA and Madison,

WI. Each jurisdiction within the region is encouraged to modify the examples to fit their community's specific needs.

Type of Establishment	Minimum Number of Bicycle Parking Spaces
Primary or Secondary School	10% of the number of students, plus 3% of the number of employees
College or University Classrooms	6% of the number of students, plus 3% of the number of employees
Dorms, Fraternities and Sororities	1 space per 3 rooms
Shopping Mall	10% of the number of automobile spaces
Commercial Street	1 space per 3,000 sq.ft of commercial space
Sport and Recreational Center	12% of the number of automobile spaces
Office Building	10% of the number of automobile spaces
Government Building	10% of the number of automobile spaces
Movie Theater or Restaurant	10% of the number of automobile spaces
Manufacturing Plant	4% of the number of automobile spaces
Multi-Unit Housing	1.5 spaces per apartment
Public Transit Station	20 spaces minimum
Other Land Uses	5 - 10% of the number of automobile spaces
General Notes:	A minimum of 2 spaces shall be required. After the first 50 spaces are provided parking requirements shall be reduced by half.

For existing establishments, the public sector's responsibility for providing parking will generally be at all regional bicycling destinations, and at the local level, at all public buildings and in the Central Business District.

The private sector should be encouraged to provide bicycle parking at trip origin points such as apartment complexes and dormitories, as well as at major private destinations including shopping centers and major employers.

Jefferson County residents responding to the survey conducted as part of this planning effort indicated that they would use bicycle parking facilities in the following locations: downtowns 31%, strip commercial centers 30%, restaurants 20%, offices/employment centers 14%, other 4%. These responses indicate a desire to be able to run errands and conduct other short trips by bike instead of by car if safe, secure and convenient parking is available.

Facility Location

A final element of a local parking ordinance should include guidelines for locating bicycle parking areas. General rules to follow include:

1) Locate parking in a secure area, which is highly visible and well lit, to help avoid vandalism and theft.
2) Parking areas should be paved, easily accessible and convenient. Bike parking should be located no further than 50 feet from a building entrance, or no farther away than the closest non-handicap automobile parking space.

3) Whenever possible, parking is desired to be protected from the weather by a roof or overhang.
4) Bicycle parking ***must not*** interfere with pedestrian or auto traffic.
5) Locate rack on a paved surface.

Converting automobile parking spaces into bicycle parking areas can be an easy and efficient way of providing bicycle parking. One auto space can accommodate six to eight bicycle parking spaces, in layouts similar to those depicted next page. If located in high traffic areas, a perimeter barrier may be required to protect bikes from damage by moving cars.

Some Jefferson County communities desire to develop centralized bicycle parking areas within downtown parks. In addition to these areas, inverted "U" racks which do not take up much space, should also be strategically dispersed throughout the CBD for short-term use by customers. Appropriate locations are areas with wide sidewalks, 12 feet or greater in width, as illustrated at bottom of next page. Curb bulbs installed for traffic calming purposes on Main streets also provide space for larger, multi-bike racks, as below.

Education, Enforcement and Encouragement

In addition to identifying facility improvement needs within Jefferson County, the consultants preparing this plan were charged with responsibility for recommending an educational and promotional program to increase bicycle and pedestrian usage of the system. Public input into the planning process also stressed the need for educating cyclists and motorists within Jefferson County, and increasing public awareness of bicycling and walking benefits and opportunities.

Area residents and community officials recognize that constructing facilities is not the only measure needed to convince significant numbers of local citizens to use their bicycle or walk for transportation. The mobility offered by the automobile is a deeply ingrained habit which most people rarely consider breaking. To do so, bicycling and walking must be extremely convenient travel choices and be actively supported by local governments, public school systems, police departments, the media and the private sector.

Following a "4-E Approach" to comprehensive bicycle and pedestrian planning, the following actions are therefore recommended to augment the engineering improvements planned for Jefferson County:

Education

Teach the basics of bicycle safety to children in elementary grades.

Classroom Instruction

A recommended approach to learning is to adopt a hands-on bicycle education curriculum for use in area schools. A national model designed by the Bicycle Federation of America that gives students a foundation of knowledge and skills in traffic-wise bicycling is *The Basics of Bicycling*. Aimed at 4th graders, the curriculum features on-bike riding lessons and skills testing in a simulated traffic environment. The program is designed to be incorporated into the regular school curriculum in seven 40-minute class periods. Two in-class video lessons are supplemented with five on-bike sessions. The instructor's book and video tape are available for $99.00. The WisDOT Office of Transportation Safety has purchased copies of the program for distribution to school districts and/or CESA offices. To order additional copies, contact:

The Bicycle Federation of America

1818 R St. NW, Washington DC 20009. Phone: (202) 332-6986

Supplemental Resources

Numerous brochures, coloring books, safety pamphlets and educational videos are available to promote children's use of bicycle helmets and knowledge of safe riding skills. These materials should be obtained by local civic groups and other interested parties and become widely distributed throughout the community. A long-term goal may be to stock area libraries with a variety of video tapes for loan to schools, police departments, and other organizations within the county. In the interim, films and videos are available on loan from the local AAA, CESA office, state agencies and other organizations. The UW-Extension office should maintain current listings of materials available from these resources. Sources to contact include:

Wisconsin Department of Transportation, Maps and Publications Sales
3617 Pierstorff Street, P.O. Box 7713, Madison, WI 53707-7713
(608) 246-3265

Wisconsin AAA - Joe Laubmeier, Public Relations Coordinator
8030 Excelsior, P.O. Box 33, Madison, WI 53701-0033
(608) 828-2492

Walk Alert Program of the National Highway Traffic Safety Administration
NHTSA Region 5 Office
19900 Governor's Drive, Suite 201, Olympia Fields, IL 60461
(708) 503-8822 / fax: (708) 503-8991

National SAFE KIDS Campaign
111 Michigan Avenue, NW, Washington, DC 20010-2970
(202) 939-4993 / fax: (202) 939-4838

National Safety Council
1121 Spring Lake Drive, Itasca, IL 60143-3201
(708) 285-1121 / fax: (708) 285-1315

Adventure Cycling Association
150 E. Pine Street, P.O. Box 8308, Missoula, MT 59807-8308
(406) 721-1776

Aims Media
6901 Woodley Avenue, Van Nuys, CA 91406-4878
(800) 367-2467, ext. 428

Coronet/MTI Film & Video, Inc.
108 Wilmont Road, Deerfield, IL 60015
(800) 777-2400, ext. 2429

Outdoor Empire Publishing
511 Eastlake Avenue, East, Seattle, WA 98109
(206) 624-3845 / fax: (206) 340-9816

Ridesafe, Inc.
30 W 260 Butterfield Road, #208, Warrenville, IL 60555
(800) 285-RIDE

Teach bike handling techniques and rules of the road to teenage/adult cyclists.

Effective Cycling Course

An adult education course is sponsored nationwide by the League of American Bicyclists. The Effective Cycling course was designed as a comprehensive series of eleven 3-hour sessions on equipment, riding skills, operating in traffic, and different cycling techniques. Due to the extensive level of commitment involved in taking this course, workshops and one-day short courses are now taught for various skill levels.

A recommended method of offering such courses is through the University of Wisconsin-Whitewater or the Jefferson County Extension Office. Civic organizations and major employers are also encouraged to sponsor one-day events. A local cyclist may wish to become certified as an Effective Cycling instructor through the League of American Bicyclists, or an instructor may be brought in from another part of the state to teach a one-day Effective Cycling clinic. Call the League's national office at (410) 539-3399 for details and names of certified instructors.

In addition, copies of the book *Effective Cycling* by John Forester (Sixth Edition, 1993, The MIT Press) and the *Effective Cycling* videotape (1992, Seidler Productions, Inc.) should be made available to the public through local libraries and bookstores.

Supplemental Literature

Soon to be available through bicycle shops affiliated with CABDA - the Midwest Bicycle Dealer's Association - is a new publication entitled *Bicyclist Survival*. Patterned after a very successful project of the Chicagoland Bicycle Federation, this 34-page booklet provides cyclists 12 years and older with a wealth of information to make bicycling a safer activity. This easy-to-read and well illustrated resource should be available for free in area bike shops. CABDA member shops please obtain copies by contacting:

CABDA
4365 W. Irving Park Road, Chicago, IL 60641
Phone: (312) 777-1229

Employers are also encouraged to distribute educational materials to current and potential bicycle commuters. *Street Smarts: Bicycling's Traffic Survival Guide* is a recommended publication designed to assist riders in becoming confident, street-wise cyclists. Copies of this 40-page booklet are available at a cost of $0.30 each, including shipping and handling, from:

Rodale Press, Inc.
Bicycling Magazine, 33 E. Minor Street, Emmaus, PA 18098
Phone: (610) 967-5171

Visitor centers within Jefferson County - especially those located at trail heads - should also stock traffic safety brochures targeted to adults and their families in addition to bicycling tourism publications.

Teach basics of pedestrian safety to young children.

Parent Education

Walk in Traffic Safely (WITS) takes a parent-child approach to education, targeting children 2 to 5 years old. WITS looks at how and when to safely cross a road, and emphasizes that driveways are not safe places to play. Kits include two storybooks, a teacher's guide, a parent brochure and poster. Cost $8.00, available through:

National Association for the Education of Young Children

1509 16th Street NW, Washington, DC 20036
(202) 232-8777 or (800) 424-2460

Classroom Instruction

The Wisconsin Department of Public Instruction has developed a course to improve pedestrian safety for the elementary school bus rider and pedestrian. *Classroom Activities in School Bus and Pedestrian Safety Education* is supplemented with two videos: one for Grades K-3, another for Grades 4-6. Copies of the curriculum have been furnished to each school district and CESA office by the WisDOT Office of Transportation Safety. To order additional copies:

WisDOT Maps and Publications Sales
3617 Pierstorff Street, P.O. Box 7713, Madison, WI 53707-7713
(608) 246-3265

Educate motor vehicle operators to the rights and responsibilities of bicyclists and pedestrians.

Driver Education and License Testing

The topic of bicycle safety should be addressed in driver education materials as developed at the state level. However, video monitoring may be used to enhance educational materials being presented locally.

This approach is currently being undertaken by some Wisconsin communities to educate the general public by monitoring local pedestrian/motor vehicle actions. A video camera is used to document the problems faced by pedestrians crossing the area streets and roadways. The videos, targeted toward the driving public, are then shown at malls, fairs and community events. The activity may be easily modified and expanded as part of the local driver education program for bicycle safety. The creation of the video segments should reflect the conditions that most commonly contribute to bicycle/motor vehicle crashes, namely bicyclist disregarding signals, failing to yield or being inattentive, and driver inattention and failure to yield. Hazardous behaviors and conditions at intersections should be highlighted.

To increase awareness of pedestrians, a 10-minute video and follow-up discussion guide has been developed by the Wisconsin Office of Public Safety to educate young adults to be courteous motorists, as well as to become safe pedestrians. "*Hey, Why Don't You Watch Where You're Going?*" is targeted to youth and adult audiences in school and community groups. This driver education video highlights six common pedestrian/ motor vehicle accident types and presents prevention tips for drivers. A follow-up guide is provided to lead a group discussion of topics covered.

For information on either program, contact:

Joann Pruitt Thunder, Bicycle/Pedestrian Safety Program Manager
WisDOT, Office of Transportation Safety
4802 Sheboygan Avenue, P.O. Box 7910, Room 809, Madison, WI 53707
(608) 267-3154

Media Promotions

Motor vehicle operators may best be reached by educational messages included as part of promotional and public relations campaigns and through enforcement of pedestrian and bicycle related traffic laws. Specific strategies for these actions are presented in the following sections under enforcement and encouragement.

Train local planners, parks and recreation professionals, and engineers to better understand bicycle and pedestrian needs.

Workshops

For planners, engineers and interested members of local bicycling and walking advocates, several education opportunities exist at the state and national levels, as outlined following. Additional planning and design short courses are periodically sponsored by WisDOT. Local communities should encourage and require staff or other representatives to attend such courses to ensure that facilities are properly selected, designed and constructed to meet the needs of cyclists within the region. Participants should then, in turn, educate other local staff, elected officials and citizen constituents.

Teaching Safe Bicycling

These "training for trainers" workshops are held annually in communities statewide. For a $10 registration fee, local teachers and law enforcement officials can be introduced to skills and information needed to teach safe bicycling within their community. Contact the WisDOT Office of Public Safety at (608) 267-3154.

Wisconsin Governor's Bicycle Conference

In 1994, the first annual Wisconsin Governor's Bicycle Conference was sponsored by the WisDOT Office of Transportation Safety. Call (608) 267-3154 for details.

Bicycle Planning and Design

The Bicycle Federation of America and Adventure Cycling Association jointly sponsor 1, 2 and 5-day workshops for planners, engineers and bicycle advocates. The hands-on workshops held in Missoula, MT focus on planning and design for bicycles and implementation in the era of ISTEA. For schedules and costs contact the BFA Montana Office at (406) 543-8113.

Bicycle Planning and Facility Workshop

The Traffic Institute at Northwestern University in Evanston, IL offers a similar 3-day workshop on bicycle planning and the design of bikeway facilities. For locations, schedules and costs contact Alex Sorton at (406) 543-8113.

Reference Materials

It is recognized that not every professional working within Jefferson County can attend such courses to obtain an in-depth knowledge of planning and designing non-motorized facilities. At minimum, planners and engineers working at the local, county, and district level should each have a copy of the following. (Information on ordering respective publications is contained in Appendix A of this plan.)

- *1991 AASHTO Guide for the Development of Bicycle Facilities*
- *Manual on Uniform Traffic Control Devices*
- *Selecting Roadway Design Treatments to Accommodate Bicycles*
- *Wisconsin Bicycle/Pedestrian Planning Guidance*

Enforcement

Train law enforcement personnel to better understand bicycle and pedestrian needs.

Officer Training

WisDOT is developing a bicycle education curriculum for law enforcement officers entitled *Safe and Legal Bicycle Operation for Patrol Officers*. The curriculum, which should be available statewide in 1996, addresses the nuts-and-bolts of safe bicycling, and teaches patrol officers which behaviors and roadway conditions commonly lead to cyclist accidents. For details on having the course taught at a local venue, contact the WisDOT Office of Transportation Safety at (608) 267-3154.

The Law Is for All is an 11-minute video developed by the League of Michigan Bicyclists to demonstrate the need for law enforcement officials to enforce safe bicycling practices. The video tape, which focuses on common causes of crashes, is available nationwide through the League of American Bicyclists. Orders may be placed at (410) 539-3399. Master tapes may also be available from the League of Michigan Bicyclists for copying and distributing to all law enforcement agencies within a region. Contact Don Reed at (616) 369-2294 for details.

For officers seeking additional training as cops-on-bikes, the International Police Mountain Bike Association (IPMBA) has developed a program to assist departments using bicycles for patrol purposes. A standardized 4-day training course exists for bicycle patrol officers, based on the *Effective Cycling* program. For details on participation, or for information on membership in IPMBA, call (410) 539-3399.

Enforce common violations incurred by pedestrians, bicyclists and motor vehicle operators.

Selective Enforcement

Selective enforcement acknowledges that police officers have a multitude of responsibilities and allows officers to concentrate on those violations which most commonly lead to accidents, as identified below.

Selective pedestrian infractions to focus on include:

- Jay walking
- Crossing against traffic signals

Selective bicyclist infractions to focus on include:

- Running stop signs and traffic signals
- Riding on the wrong side of the road
- Riding on sidewalks where prohibited
- Riding at night without a headlight

Selective motorist infractions to focus on include:

- Speeding
- Failing to yield when turning
- Running stop signs and traffic signals
- Failing to share the road with bicyclists
- Exhibiting aggressive behavior towards bicyclists and pedestrians

Prior to stepping up bicycle and walking enforcement efforts, it is recommended that Jefferson County agencies undertake community relations activities such as soliciting support of parents, schools, civic groups and the local media; developing written policies and procedures to ensure a commitment to firm, fair and consistent enforcement; and running media announcements to provide advance notice of the forthcoming activity and an explanation of its purpose.

Traffic Ordinances

The *Model Traffic Ordinance (MTO)* is part of the national *Uniform Vehicle Code* that recommends motor vehicle ordinances for municipalities and other units of local government. It is recommended that Jefferson County communities use these ordinances as a standard for reviewing their own traffic ordinances, making modifications, and developing new ordinances. Using such a national standard promotes uniform and consistent laws among the various jurisdictions. Revised in 1987, the UVC and MTO are available from:

National Committee on Uniform Traffic Laws and Ordinances
The Traffic Institute, Northwestern University, Evanston, IL 60204

Involve local law enforcement personnel in educational safety programs.

Positive Reinforcement Programs

The Police Department in La Crosse, WI has an exemplary program in place to provide bicyclist education in lieu of issuing traffic citations. In the summer months, "bicycle tickets" are issued to cyclists under age 18. One-hour Bicycle Safety Classes are held every Wednesday for bicyclists cited with committing offenses including no headlight, no taillight/reflector, no registration, riding double, riding on the wrong side of the street, and failing to heed traffic signs or signals. This type of program is applicable in Jefferson County communities, and represents an excellent means to educate the hard-to-reach age group of junior/senior high youth. For details of the program contact Officer Jim McDowell at (608) 789-7206.

In addition to issuing tickets to violators, several communities across the country have adopted the practice of issuing rewards to law abiding cyclists. The rewards are usually given to children by a police officer for such activities as wearing their helmet or riding on the right side of the street. Coupons that are designed to look like traffic tickets are filled out by the police officer entitling the cyclist to free ice cream cones or reduced bicycle accessory purchases, for example. The program is a positive method of reinforcing safe riding habits, and is a unique advertising option for area businesses.

Headlight and Helmet Education

The Jefferson County Bikeway/Pedestrianway Plan Survey revealed that almost half of all respondents, both experienced and novice riders, never use a headlight when riding at night. The survey also indicated a lack of bicycle helmet usage (28%), with almost all of the non-helmeted riders coming from the general public rather than from bicycle clubs.

A high priority for a combination education/enforcement program within Jefferson County is thus one that focuses on bicyclist use of lights for nighttime riding. By combining enforcement efforts with headlight and taillight give-aways and establishing a mechanism to evaluate results, the county may qualify for special Section 402 Highway Safety Funds. For details contact Tom Loeffler at (414) 266-1097 or Joanne Pruitt Thunder at (608) 267-3154. For assistance in obtaining bulk quantities of headlights or taillights at discounted prices, it is recommended interested parties work with local bicycle shops and/or contact light manufacturers directly as they frequently offer a discount rate for non-profit and governmental agency purchase.

A variety of organizations are available to assist in promoting helmet use and conducting bulk helmet purchase programs. As outlined on page 49, RideSafe, the National Safe Kids Campaign and the National Safety Council are good resources.

Encouragement

Encourage employers and businesses to promote employee and customer commuting by bike or on foot.

Incentives for Employers

Local bicycle parking ordinances may include provisions that allow a reduction, up to 10 percent for example, in the number of auto parking spaces required in exchange for providing a combination of Type I and Type II bicycle parking. This type of policy is an incentive to developers and employers who can realize a cost savings for installing bicycle parking over automobile parking, and have less of their land committed to paved, off-street parking lots.

A speakers bureau of representatives from area bike shops, bike clubs and bicycle commuters should be established to provide free seminars to interested companies. Workshops should address commuting tips, bicycle tune-ups and fitness benefits for employees, as well as employer assistance with such tasks as sighting bicycle parking areas and locker facilities and developing bike commuter bulletin boards.

Local Chambers of Commerce should survey area companies to determine which employers currently provide showers, lockers, bicycle parking and other amenities for their employees and customers. The list of pro-bike businesses and their successful programs should be widely published. Certificates of appreciation, window decals or similar advertising media should be given to employers to display at their place of business.

Local employers are encouraged to look into life and automobile insurance discounts that may be available for employees who commute to work by bicycling or walking. As applicable, employers are also encouraged to include and promote bicycling and walking as a component of their company's physical fitness benefits package.

Incentives for Employees

Secure bicycle parking, showers, changing rooms and lockers should be provided at the work place to make it just as easy to bike to work as it is to commute by car.

Employers should have "flex time" provisions and/or relaxed dress codes for bicycle commuters. An effective way of phasing in this type of program is to designate Fridays as "Alternative Modes Day" to encourage more people to try bicycling or walking to work. Promotion of this concept on a county-wide basis will help to institutionalize this policy within multiple companies.

Employers should be encouraged to offer financial incentives to employees such as:

- Offering to reimburse employees for business travel on bikes, as is done for the usage of cars, at a rate of four to eight cents per mile.
- Giving employees a bonus of 15 minutes of vacation time each time they bicycle to work.
- Sponsoring a monthly drawing for dinners or prizes for cyclists who ride 4 or 5 days per week.
- Offering payroll subsidies, of $15 to $30 per month for example, to regular bicycle commuters.
- Obtaining group discounts on new bicycles, helmets, headlights, locks and other commuter accessories.
- Providing financing or an easy payroll deduction plan to buy a new bike.

Hold special events to locally promote bicycling and walking and to encourage tourism with Jefferson County.

National Bike Month

For almost 40 years, the League of American Bicyclists (formerly the League of American Wheelmen) has sponsored National Bicycle Month each May. Typically, one week of the month is designated as Bike to Work Week, or Jefferson County may select a week in which to focus bicycle promotion activities. A *National Bike Month Organizer's Kit* is available which contains ideas and planning advice on commuting events, bicycle rodeos, helmet promotions, charity rides, trail maintenance projects, and events designed to get local politicians and decision-makers out on bikes. Tips for working with the media, recruiting volunteers and evaluating programs are also included. To order a copy of the kit, complete with sample posters, send $8.00 plus $2.75 shipping and handling to:

League of American Bicyclists National Office
190 W. Ostend Street, Suite 120, Baltimore, MD 21230-3755.
Phone: (410) 539-3399

Pedestrian Safety Week

Similarly, a designated pedestrian safety month or week should be proclaimed locally. Activities may correspond with the National Safety Sabbath, as sponsored by the National Safety Council. This awareness day takes place each February, on Valentines Day. For more information on the program, which gives away thousands of kits containing a variety of information and activity ideas on safety, contact the National Safety Council at (800) 621-7615.

Organized Bicycle Rides

The Tour De Fort bicycle club and various philanthropic organizations host bicycle rides as annual fund raisers. Such events should also be viewed as venues to offer bicycle safety training and to promote the benefits of biking and walking for utilitarian as well as recreational riding.

Develop publicity programs to promote the benefits of bicycling and walking and to identify safe places to ride and walk.

News Media

Coverage of newsworthy bicycle and walking activities and events is an excellent way to keep human-powered transportation issues in front of the general public. The UW-Extension Jefferson County Office and other local agencies should work to have feature articles on various aspects of bicycling and walking appear periodically in the local newspapers.

News stories should also be covered by local television stations. Ribbon-cutting ceremonies for new facilities, the kick-off of new education programs and sponsorship of special events present great photo opportunities.

In between special events, *Bicycle Safety TV Spots* may be aired to foster heightened awareness of bicycling. The AAA Foundation for Traffic Safety has produced Public Service Announcements (PSAs) to promote bicycle safety reminders to the general public. $40 per set from:

AAA Foundation for Traffic Safety
1440 New York Avenue NW, Suite 201, Washington, DC 20005
(202) 638-5944 or (800) 305-SAFE

Radio represents another media where local PSAs may be cost effectively developed and aired. A proposed format is to feature local bicycle commuters, school children and walkers giving brief testimonials, combined with a safety or promotional message in a 10- to 20-second radio spot. Area businesses and civic organizations should be encouraged to sponsor the spots, "as a public service announcement from ___ organization."

Alternative Publicity

Another medium to consider for promoting human-powered transportation is outdoor advertising. A traditional approach is to have available commercial billboard space feature public service announcements. An alternative outdoor advertising opportunity would be the creation of seasonal banners for use on each community's main street, as depicted and discussed under the use and development of a "Bike Jefferson County" logo on page 41.

Local Chambers of Commerce should be encouraged to promote Jefferson County as a bicycle-friendly region. In addition to promoting the Glacial Drumlin Trail, these agencies should highlight the county's bicycle and walking plan in an effort to encourage more visitors to plan their overnight stays within Jefferson County. Likewise, area restaurants, hotels and other businesses should promote their proximity to facilities, and indicate if drinking water, rest rooms, bicycle parking and other services are available at their establishments.

Hospitals, insurance companies and health care professionals in Jefferson County should jointly market the benefits of bicycling and walking on personal and environmental health. Professionals and educators should promote using transportation modes that simultaneously offer the benefits of regular exercise.

Communities are also encouraged to apply for bicycle-friendly designation through the League of American Bicyclists. Qualifying communities who adopt pro-bicycle policies, budget funds for bicycle projects, observe National Bike Month, and establish a citizen's bicycle advisory committee receive community welcome signs and other recognition.

Bicycle Maps

Producing a local bicycling map is the final publicity strategy to encourage more people to bike on a regular basis. According to a recent study of the Wisconsin Bicycle Map, consumers expect a bicycle map to fulfill two overall goals: [28]

1) As a trip planning tool - to find new routes or trails, distances and new locations to bike
2) As a navigation tool - to be taken along on bike outings for reference.

The final work task of this bikeway/pedestrianway planning effort is to develop the base for a "Bike Jefferson County" map that meets these goals. As envisioned, this piece will contain an overall map depicting preferred bicycling routes within the county, and enlarged maps of each of the cities and villages to show local bicycle facilities and the suitability of existing streets for bicycling. The map will also contain safety tips and contact information for local cycling conditions. Advertising by local businesses is a potential means of funding for map printing and distribution.

A supplemental approach to bikeway mapping is to have the local telephone company and Chambers of Commerce include designated bicycle facilities within area maps and street directories. In this manner, all area residents and visitors will be provided with a certain level of bicycling information by default whenever they reference a street map.

Support state and national advocacy efforts to ensure future funding and political support for bicycling and walking projects and programs.

ISTEA II

The Intermodal Surface Efficiency Act of 1991 (ISTEA), a major federal funding source for bicycle/pedestrian projects, is up for reauthorization in 1997. Many groups nationwide are already at work to ensure that provisions for public involvement and local decision making remain part of the transportation planning process, and that bicycling and walking modes continue to be eligible activities for transportation funding. Broad-based citizen support from every state is needed to ensure that lobbyists can't influence a rewrite of ISTEA without these critical provisions.

Community groups nationwide are encouraged to contact their Congressional representatives and let them know that bicycling and walking projects are important to the quality of life for their constituents. Offer to take Congressmen for a bike ride or a walk on a trail to show him/her first-hand the impact such projects have on local communities. For assistance in organizing events or for legislative action updates contact:

The League of American Bicyclists, Director of State and Local Advocacy
749 N. 26th Street, Philadelphia, PA 19130
Phone: (215) 232-5129 E-mail: BIKENOEL@aol.com

Bicycle Federation of America, Director of Advocacy Programs
P.O. Box 51, 111 East Jackson, Burnet, TX 78611
Phone: (512) 756-4213 E-mail: BFACharlie@aol.com

Rails-to-Trails Conservancy
1400 Sixteenth Street, NW, Suite 300, Washington DC 20036
Phone: (202) 797-5400 E-mail: RTCDC@aol.com

Wisconsin Legislation

Regardless of the outcome of the federal ISTEA legislation, bicycling and walking advocates within Wisconsin should vocalize their support of the Statewide Multi-Modal Improvements Program (SMIP) and encourage the Wisconsin legislature and WisDOT to continue a set aside program of transportation funds at the state level for bicycling and walking projects.

Similarly, the Wisconsin Stewardship Program expires in a few years and grassroots bike/ped interests will be well served to begin lobbying for a continuation of this program, which has preserved many miles of linear open space corridors for trail development.

To help support advocacy efforts in your state, please join the Bicycle Federation of Wisconsin, a nonprofit group working to make Wisconsin a better place to bike. Contact:

Bicycle Federation of Wisconsin
104 King Street, Suite 204, Madison, WI 53703
Phone: (608) 251-4456